NUTRITIONAL COMPOSITION OF FEEDSTUFFS FOR BEEF CATTLE

K-STATE Research and Extension

This publication summarizes the nutrient composition of feed ingredients for dietary formulation and evaluation for beef cattle. Feedstuffs considered commonly available to producers across Kansas are included, along with additional ingredients for which composition values are well documented.

Nutritional values listed are comprised from several publications including the previous version of this publication *Nutritional Composition of Feedstuffs for Beef Cattle*, L884; *Nutrient Requirements of Beef Cattle* (NASEM, Seventh and Eighth Revised Editions); *Nutrient Requirements of Dairy Cattle* (NASEM, Seventh Revised Edition); BRANDS formulation software used by K-State Research and Extension; and other Kansas Agricultural Experiment Station research reports.

Protein (including estimates of rumen degradability and undegradability), energy, fiber components, starch, sugar, fat, and macro-minerals are nutrients of focus included in this summary.

Growing, harvesting, processing, and storage conditions can markedly influence the nutritional content of feeds. It is highly recommended that analyses obtained from submitting samples to certified laboratories be used for formulation purposes.

The values in this publication are intended to be used as a guide to assist with formulation when analyzed laboratory values are unavailable or when questions arise regarding the accuracy of values due to sampling or analytical error. With the exception of % dry matter (DM), all nutrient values are reported on a 100% DM basis. Feedstuffs commonly used in nutritional programs for beef cattle vary significantly in moisture content. Therefore, it is advised that feed and ration formulation be done on a 100% DM basis, with the as-fed (AF) amounts or inclusion percentages that are fed to the animal subsequently converted based on the assumed or analyzed moisture content of each ingredient.

When changing composition values from a DM to AF basis, take the value and multiply it by the DM content in decimal form. For example, alfalfa hay that is 18% crude protein on a 100% DM basis would equate to 16% on an AF basis if it is 89% DM or 11% moisture (18.0% × 0.89 = 16.0%).

To convert a composition value from an AF to DM basis, take the value and divide it by the DM content in decimal form. For example, corn silage that is 2.50% crude protein on an AF basis would equate to 7.14% on a DM if it is 35% DM or 65% moisture (2.5% ÷ 0.35 = 7.14%).

Any composition value will be relatively higher when expressed on a DM basis because the moisture content is removed. Likewise, values will be lower when expressed on an AF basis because moisture dilutes the nutritional components.

Abbreviations			
DM	dry matter	**NDF**	neutral detergent fiber
CP	crude protein	**ADF**	acid detergent fiber
RDP	rumen degradable protein	**Phos**	phosphorus
RUP	rumen undegradable protein	**Mag**	magnesium
TDN	total digestible nutrients	**K**	potassium
NEm	net energy for maintenance	**S**	sulfur
NEg	net energy for gain	**Na**	sodium
Mcal	megacalories	**Cl**	chloride

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
By-Products																			
Apple Pomace	18.5	6.4	43.2	56.8	70.9	0.75	0.48	45.6	38.7	4.0	0.0	6.1	0.15	0.14	0.09	0.83	0.08	0.02	0.04
Bakery By-Products	88.9	13.1	66.6	33.4	91.9	1.04	0.72	13.9	7.4	37.6	6.3	10.0	0.26	0.39	0.15	0.53	0.16	0.59	0.80
Beet Pulp, Dry	91.5	9.1	46.9	53.1	66.6	0.69	0.42	41.3	26.4	0.9	8.6	1.1	0.96	0.08	0.23	0.71	0.30	0.19	0.12
Beet Pulp, Wet	21.9	9.5	44.3	55.7	66.6	0.69	0.42	48.2	28.1	1.7	23.2	0.9	0.99	0.10	0.25	0.57	0.20	0.10	0.09
Brewers Grains, Dry	93.2	25.0	40.9	59.1	72.0	0.77	0.49	52.1	31.2	5.8	0.0	8.5	0.32	0.65	0.22	0.34	0.29	0.02	0.10
Brewers Grains, Wet	26.0	28.5	36.2	63.8	73.9	0.80	0.51	50.0	31.2	4.8	0.5	9.5	0.35	0.68	0.23	0.12	0.32	0.02	0.09
Citrus Pulp, Dry	87.7	6.9	59.7	40.3	70.0	0.74	0.47	24.0	23.0	1.0	0.0	2.4	1.84	0.11	0.13	0.98	0.11	0.05	0.12
Citrus Pulp, Wet	19.4	8.6	61.9	38.1	70.2	0.74	0.47	26.3	23.0	1.7	0.9	3.2	1.28	0.16	0.13	1.22	0.11	0.04	0.11
Corn Condensed Distillers Solubles	30.9	18.9	45.1	54.9	98.0	1.12	0.79	4.7	3.8	10.7	4.0	16.8	0.11	1.52	0.69	2.34	0.82	0.42	0.37
Corn Distillers Grains With solubles, Dry	90.0	30.8	32.1	67.9	89.0	1.00	0.69	33.7	16.2	5.9	1.2	10.7	0.05	0.86	0.32	1.05	0.66	0.18	0.27
Corn Distillers Grains With Solubles, Modified	47.8	29.1	27.2	72.8	93.0	1.05	0.74	28.7	14.8	3.4	0.0	10.2	0.08	0.94	0.38	1.27	0.67	0.39	0.16
Corn Distillers Grains With Solubles, Wet	31.4	30.6	30.1	69.9	98.0	1.12	0.79	31.5	15.3	6.1	0.9	10.8	0.05	0.81	0.35	1.00	0.65	0.20	0.17
Corn Gluten Feed and Modified Corn Distillers Grains; Golden Synergy®	50.4	24.6	33.4	66.6	89.0	1.00	0.69	29.3	10.3	11.5	0.0	8.7	0.09	0.82	0.34	1.17	0.62	0.21	0.14
Corn Gluten Feed, Dry	89.8	22.6	62.9	37.1	80.0	0.88	0.59	35.0	11.2	16.9	2.7	3.3	0.10	1.01	0.43	1.41	0.58	0.30	0.26
Corn Gluten Feed, Wet	43.8	21.7	65.9	34.1	86.0	0.96	0.66	38.5	11.8	15.2	3.4	4.3	0.05	0.90	0.41	1.32	0.52	0.16	0.19
Corn Gluten Feed, Wet; Sweet Bran®	60.1	23.8	77.0	23.0	89.0	1.00	0.69	26.8	9.8	19.5	0.0	4.7	0.06	0.97	0.40	1.39	0.49	0.04	0.05
Corn Screenings	86.2	8.8	43.0	57.0	72.8	0.78	0.50	14.8	5.3	67.7	2.8	3.3	0.06	0.25	0.12	0.39	0.10	0.03	0.15
Corn Steep	46.4	31.8	41.0	59.0	98.0	1.12	0.79	3.5	2.7	11.4	15.0	4.5	0.10	2.05	0.90	3.19	1.19	0.59	0.40
Cotton Burrs	90.5	8.7	50.0	50.0	45.2	0.36	0.12	60.9	55.9	6.0	2.7	2.5	1.40	0.17	0.31	2.26	0.32	0.04	0.51
Cotton Gin Trash	90.9	12.3	36.1	63.9	48.5	0.41	0.17	60.6	52.3	1.1	0.0	3.6	1.57	0.24	0.31	1.86	0.39	0.05	0.47
Cottonseed Hulls	91.4	6.7	29.9	70.1	42.0	0.31	0.07	81.1	65.1	1.1	0.0	2.7	0.22	0.16	0.22	1.20	0.11	0.02	0.10
Glycerin	80.3	0.8	–	–	69.0	0.73	0.45	0.3	0.2	0.4	1.4	6.2	0.08	0.19	0.07	0.53	1.18	2.48	4.49
Grain Dust	89.0	10.0	70.0	30.0	82.0	0.90	0.60	16.0	9.0	–	–	0.0	0.35	0.25	–	–	–	–	–
Grape Pomace, Dry	91.8	12.3	25.1	74.9	47.0	0.39	0.14	51.8	46.3	1.0	0.0	8.9	0.62	0.27	0.13	0.91	0.16	0.03	0.16
Grape Pomace, Wet	41.9	11.7	24.6	75.4	56.0	0.53	0.28	50.1	43.4	1.0	0.0	9.0	0.51	0.25	0.12	1.61	0.15	0.05	0.05
Hominy	88.7	10.3	33.5	66.5	87.2	0.98	0.67	16.8	5.6	56.8	1.1	7.1	0.04	0.54	0.20	0.62	0.12	0.02	0.11
Molasses, Beet	77.9	10.9	100.0	0.0	75.0	0.81	0.53	0.0	0.0	0.0	70.6	0.0	0.11	0.14	0.09	3.45	0.41	1.03	1.09
Molasses, Cane	66.0	8.6	100.0	0.0	72.0	0.77	0.49	0.0	0.4	12.0	60.0	1.9	0.88	0.22	0.40	4.46	0.68	1.04	2.21
Oat Hulls	91.6	6.1	53.6	46.4	56.5	0.54	0.29	64.4	35.9	15.8	0.0	2.8	0.14	0.20	0.13	0.60	0.09	0.05	0.15
Onions	23.2	10.1	48.2	51.8	68.9	0.73	0.45	10.5	8.8	54.5	0.0	13.6	0.51	0.32	0.17	1.26	0.34	–	–
Pea Hulls	88.8	20.1	64.2	35.8	71.0	0.76	0.48	54.9	18.8	40.0	0.0	1.3	0.20	0.39	0.20	0.97	0.17	0.95	0.39
Peanut Hulls	93.4	9.5	47.5	52.5	42.8	0.32	0.08	68.5	58.9	1.2	0.0	4.2	0.29	0.10	0.14	0.70	0.10	0.03	0.10
Potato Byproduct, Dry	90.9	8.1	51.6	48.4	79.2	0.87	0.58	18.4	13.3	44.3	0.0	3.9	0.17	0.22	0.13	1.39	0.12	0.12	0.17

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
By-Products																			
Potato Byproduct, Wet	23.4	12.1	46.7	53.3	79.1	0.87	0.58	21.7	15.5	44.3	0.0	7.9	0.41	0.35	0.13	1.19	0.16	0.09	0.17
Potato Peels	43.4	13.8	51.6	48.4	78.0	0.85	0.56	16.0	10.0	0.0	0.0	0.6	0.29	0.23	0.20	1.39	0.12	0.12	0.17
Potatoes	23.5	10.1	37.6	62.4	76.7	0.84	0.55	11.2	7.3	60.9	0.0	7.5	0.14	0.27	0.11	1.88	0.14	0.04	0.26
Rice Bran	91.8	14.7	55.3	44.7	83.4	0.93	0.63	26.6	20.0	20.2	0.0	17.6	2.04	1.61	0.73	1.28	0.16	0.06	0.13
Rice Hulls	92.0	5.4	50.0	50.0	31.5	0.13	0.11	53.8	52.6	0.1	0.0	4.3	0.18	0.31	0.19	0.54	0.09	0.04	0.02
Soybean Hulls	90.0	12.4	46.9	53.1	62.6	0.63	0.37	64.8	46.4	1.1	2.2	2.3	0.60	0.15	0.27	1.34	0.12	0.02	0.06
Sunflower Hulls	91.3	16.9	58.0	42.0	54.6	0.51	0.26	72.3	50.1	13.1	0.0	16.3	0.65	0.48	0.31	1.39	0.29	0.44	
Sunflower Screenings	89.3	15.4	80.0	20.0	56.5	0.54	0.28	47.2	34.0	3.0	0.0	21.0	0.73	0.42	0.44	1.61	0.23	0.03	0.11
Tallow	99.0	0.0	0.0	0.0	177.0	2.15	1.59	0.0	0.0	0.0	0.0	99.0	0.57	0.06	0.06	0.32	–	0.01	–
Vegetable Oil	100.0	0.0	0.0	0.0	184.0	2.56	1.76	0.0	0.0	0.0	0.0	99.9	–	–	–	–	–	–	–
Wheat Bran	90.1	17.5	64.3	35.7	71.9	0.77	0.49	40.1	14.0	21.2	0.0	4.3	0.13	1.04	0.42	1.20	0.19	0.03	0.10
Wheat Middlings	88.8	18.6	68.4	31.6	72.9	0.78	0.50	38.3	13.2	25.6	0.0	4.1	0.12	1.08	0.43	1.15	0.20	0.05	0.14
Wheat Screenings	89.0	15.8	70.0	30.0	71.0	0.75	0.48	16.0	9.0	–	–	0.0	0.15	0.39	–	–	–	–	–
Whey, Dry	93.8	13.9	76.8	23.2	82.3	0.91	0.62	0.6	0.4	1.3	56.1	2.0	0.61	0.77	0.14	1.76	0.21	1.13	1.36
Whey, Wet	16.6	6.3	93.0	7.0	80.9	0.89	0.60	1.7	4.2	3.3	50.6	4.0	0.99	1.01	0.18	2.99	0.13	1.04	3.53
Dry Forages																			
Alfalfa Cubes	91.0	18.1	69.0	31.0	56.0	0.53	0.28	45.5	35.4	1.3	0.0	2.1	1.49	0.23	0.28	2.05	0.25	0.16	0.70
Alfalfa Dehy	93.8	18.5	54.0	46.0	62.4	0.63	0.37	40.4	31.2	0.9	0.0	4.0	2.23	0.40	0.32	2.32	0.28	0.05	0.27
Alfalfa Hay, Early Vegetative	91.0	26.7	88.5	11.5	66.5	0.69	0.42	34.5	–	–	–	3.6	1.50	0.33	0.21	2.51	0.54	0.12	0.34
Alfalfa Hay, Late Vegetative	91.0	24.4	87.5	12.5	63.5	0.65	0.39	38.0	–	–	–	3.4	1.50	0.33	0.21	2.51	0.54	0.12	0.34
Alfalfa Hay, Early Bloom	91.0	22.5	86.0	14.0	61.0	0.61	0.35	40.7	–	–	–	2.9	1.52	0.22	0.28	2.51	0.42	0.12	0.34
Alfalfa Hay, Mid Bloom	91.0	19.5	83.0	17.0	59.0	0.58	0.33	48.1	–	–	–	2.5	1.38	0.23	0.35	1.56	0.28	0.12	0.19
Alfalfa Hay, Late Bloom	91.0	14.5	78.5	21.5	52.5	0.48	0.23	54.0	–	–	–	1.6	1.19	0.24	0.27	1.56	0.30	0.07	–
Alfalfa Hay, Mature	91.0	14.0	79.0	21.0	50.0	0.44	0.19	58.0	–	–	–	1.3	1.18	0.21	0.22	2.07	0.25	0.08	–
Barley Hay	88.0	10.9	67.2	32.8	60.2	0.60	0.34	56.9	33.9	5.7	0.0	2.4	0.37	0.24	0.18	1.92	0.18	0.23	0.88
Barley Straw	85.1	6.1	64.2	35.8	48.3	0.41	0.16	71.6	50.1	14.9	0.0	1.0	0.52	0.21	0.18	2.29	0.21	0.52	0.39
Bermudagrass Hay	93.0	11.1	58.4	41.6	56.3	0.54	0.28	67.0	35.7	4.8	5.8	1.9	0.49	0.20	0.20	1.65	0.40	0.13	0.74
Bluegrass Hay	89.3	7.5	63.0	37.0	51.0	0.45	0.21	68.8	40.4	0.4	0.0	1.4	0.28	0.19	0.13	1.94	0.14	–	–
Bluegrass Hay, Mid Bloom	85.0	14.0	80.0	20.0	63.0	0.64	0.38	68.0	52.0	–	–	2.0	0.26	0.27	0.30	1.69	0.16	–	–
Bluestem Hay	89.2	6.0	63.0	37.0	50.0	0.44	0.19	69.7	43.3	0.4	0.0	1.4	0.41	0.12	0.21	1.11	0.87	0.06	–
Bromegrass Hay, Early Bloom	88.0	16.0	80.0	20.0	60.0	0.59	0.34	55.0	30.0	–	–	2.6	0.32	0.37	0.09	2.32	0.20	0.02	–
Bromegrass Hay, Mid Bloom	88.0	14.4	79.0	21.0	56.0	0.54	0.28	57.7	38.0	–	–	2.2	0.29	0.28	0.10	1.99	–	0.01	–
Bromegrass Hay, Late Bloom	91.0	10.0	59.0	41.0	55.0	0.51	0.26	68.0	–	–	–	2.3	0.30	0.26	–	–	–	–	–
Bromegrass Hay, Mature	92.0	6.0	80.0	20.0	53.0	0.49	0.24	70.5	40.0	–	–	2.0	0.26	0.22	0.12	1.85	–	0.01	–
Cane Hay	82.8	8.0	63.0	37.0	63.0	0.64	0.37	63.3	39.3	71.4	18.1	1.3	0.42	0.18	0.23	2.11	0.11	0.11	–

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
Dry Forages																			
Clover Hay, Mid Bloom	89.0	15.0	80.0	20.0	55.0	0.52	0.26	50.0	35.0	–	–	3.0	1.23	0.22	–	–	–	–	–
Corn Cobs	89.3	4.2	69.9	30.1	58.3	0.57	0.31	78.3	42.0	1.4	0.0	0.9	0.06	0.09	0.05	0.89	0.05	0.03	0.25
Corn Stalks, Baled	85.8	6.1	63.7	36.3	52.7	0.48	0.23	70.8	46.8	10.8	3.1	1.4	0.55	0.11	0.20	1.25	0.09	0.07	0.42
CRP Hay	82.0	9.9	80.0	20.0	51.7	0.47	0.22	63.9	45.4	–	–	2.0	0.81	0.18	–	–	–	–	–
Fescue Hay	88.9	9.2	71.0	29.0	58.3	0.57	0.31	65.0	40.3	3.3	0.0	2.1	0.48	0.22	0.17	1.73	0.16	0.10	1.45
Fescue Hay, Late Bloom	88.0	7.5	80.0	20.0	53.0	0.48	0.23	50.0	35.0	–	–	2.0	0.30	0.26	–	–	–	–	–
Forage Sorghum Hay	88.7	9.0	62.0	38.0	58.8	0.58	0.32	58.5	36.9	9.5	0.0	2.1	0.38	0.21	0.27	1.77	0.13	0.02	0.74
Forage Sorghum Sudan Hay	88.8	11.0	64.8	35.2	56.8	0.54	0.29	62.7	38.4	2.9	12.6	2.0	0.41	0.23	0.29	2.21	0.16	0.05	0.98
Foxtail Millet	76.0	9.8	70.0	30.0	47.6	0.40	0.15	60.3	42.0	14.7	0.0	1.0	0.62	0.16	0.20	2.65	–	0.06	–
Grain Sorghum Hay	84.8	9.0	69.0	31.0	54.5	0.51	0.26	56.4	36.5	7.3	0.0	1.6	0.44	0.17	0.26	1.71	0.10	0.03	–
Grain Sorghum Stalks	82.6	7.7	43.0	57.0	39.5	0.27	0.03	64.8	40.1	53.6	0.0	1.5	0.48	0.13	0.27	1.79	0.11	0.03	0.36
Kochia Hay	75.0	13.5	79.0	21.0	50.9	0.45	0.20	46.0	33.2	6.5	0.0	1.1	1.48	0.19	0.73	3.24	0.40	0.09	–
Ladino Clover Hay	85.0	22.0	80.0	20.0	65.0	0.67	0.40	36.0	22.0	–	–	3.0	1.35	0.31	0.28	2.62	0.21	–	–
Meadow Hay	88.8	8.8	67.0	33.0	52.9	0.48	0.23	60.9	35.8	6.8	14.0	1.8	0.50	0.18	0.19	1.75	0.18	0.04	–
Millet Forage Hay	86.3	9.5	60.4	39.6	52.5	0.48	0.23	62.5	37.7	2.9	0.0	1.7	0.50	0.21	0.32	2.58	0.20	0.03	0.90
Native Prairie Hay	88.0	6.8	62.0	38.0	48.4	0.41	0.17	66.6	41.5	4.2	0.0	1.8	0.49	0.13	0.17	1.04	0.12	0.05	0.51
Oat Hay	89.6	8.7	66.1	33.9	59.9	0.59	0.33	59.1	37.1	4.0	0.0	2.2	0.29	0.21	0.14	1.65	0.13	0.41	0.92
Oat Hay, Full Bloom	88.0	10.0	–	–	56.0	0.55	0.29	–	–	–	–	–	0.34	0.24	–	–	–	–	–
Oat Straw	84.2	4.8	55.0	45.0	44.3	0.35	0.10	73.8	49.3	1.4	0.0	1.3	0.30	0.14	0.13	2.23	0.13	0.22	0.27
Orchardgrass hay	91.5	13.8	77.0	23.0	56.2	0.54	0.28	57.4	36.7	7.1	0.0	2.3	0.53	0.24	0.26	2.60	0.22	0.05	0.41
Peanut Hay	90.8	11.0	66.5	33.5	57.5	0.56	0.30	47.4	39.1	4.0	0.0	2.0	1.24	0.15	0.55	1.52	0.14	0.05	0.68
Peavine Hay	90.7	15.6	70.2	29.8	58.6	0.57	0.31	45.9	34.9	6.5	0.0	2.0	1.21	0.27	0.32	2.03	0.18	0.04	0.48
Prairie Hay, Early Bloom	90.0	9.0	80.0	20.0	55.0	0.52	0.26	45.0	35.0	–	–	2.0	0.47	0.19	–	–	–	–	–
Prairie Hay, Late Bloom	90.0	5.8	80.0	20.0	51.0	0.45	0.20	60.0	40.0	–	–	2.0	0.43	0.15	–	–	–	–	–
Red Clover Hay	85.0	16.0	80.0	20.0	55.0	0.52	0.27	46.0	34.0	–	–	3.0	1.53	0.43	0.30	1.62	0.17	–	–
Rice Hay	92.7	7.4	61.7	38.3	54.7	0.51	0.26	62.3	43.3	9.0	0.0	1.8	0.24	0.21	0.17	1.87	0.16	0.09	0.62
Ryegrass Hay	90.4	18.6	66.7	33.3	63.7	0.65	0.38	51.5	30.9	2.3	0.0	3.3	0.51	0.32	0.22	2.38	0.23	0.46	1.24
Sorghum Forage Hay	87.0	7.0	80.0	20.0	54.0	0.50	0.24	50.0	35.0	–	–	2.0	0.45	0.22	–	–	–	–	–
Sorghum Stover, Baled Hay	86.0	6.0	–	–	49.0	0.42	0.17	–	–	–	–	–	0.45	0.14	–	–	–	–	–
Sorghum Sudan Hay	69.0	8.8	75.0	25.0	52.4	0.48	0.23	72.9	44.9	–	–	3.0	0.42	0.20	–	–	–	–	–
Soybean Hay	90.5	16.5	65.6	34.4	60.1	0.60	0.34	44.8	37.1	5.4	0.0	3.0	1.38	0.25	0.38	1.79	0.23	0.01	0.42
Soybean Stubble	85.5	5.5	58.0	42.0	35.0	0.19	0.05	69.7	55.4	13.1	0.0	0.7	1.25	0.10	0.44	1.43	0.13	0.03	
Sudangrass, Hay	89.0	8.3	58.0	42.0	54.5	0.51	0.26	65.8	41.1	1.6	0.0	1.6	0.44	0.20	0.29	2.05	0.13	0.03	1.16
Sugarcane Hay	92.7	5.5	70.5	29.5	53.7	0.50	0.25	68.9	47.5	1.5	0.0	1.8	0.39	0.14	0.22	1.36	0.16	0.06	0.31
Sweet Clover Hay, Mid Bloom	87.0	13.0	–	–	54.0	0.50	0.24	–	–	–	–	–	1.27	0.25	–	–	–	–	–
Switchgrass Hay	94.2	3.4	50.0	50.0	46.1	0.38	0.13	81.1	46.7	5.9	0.0	1.2	0.34	0.11	0.47	0.97	0.08	0.07	–

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
Dry Forages																			
Teff (Lovegrass) Hay	88.0	10.7	75.0	25.0	45.0	0.36	0.11	66.4	38.0	6.4	0.0	1.1	0.47	0.24	0.19	1.61	0.22	0.08	–
Timothy Hay	87.8	9.4	69.0	31.0	57.0	0.55	0.29	63.8	38.0	7.4	14.2	1.9	0.42	0.21	0.18	1.92	0.16	0.01	–
Triticale Hay	90.3	11.6	68.9	31.1	58.5	0.57	0.31	57.7	36.7	5.1	0.0	2.1	0.31	0.25	0.15	2.03	0.15	0.04	0.71
Wheat Hay	89.9	11.1	66.1	33.9	58.8	0.58	0.32	57.9	35.9	4.7	9.4	2.0	0.32	0.21	0.15	1.69	0.16	0.05	0.69
Wheat Straw	91.8	5.1	65.5	34.5	50.0	0.44	0.19	73.6	50.2	1.6	2.5	1.4	0.33	0.11	0.12	1.34	0.11	0.09	0.53
Wheat Straw, Ammoniated	90.0	9.0	31.0	69.0	50.0	0.43	0.18	78.9	60.0	–	–	0.0	0.18	0.05	–	–	–	–	–
Wheatgrass, Crested	88.0	9.8	80.0	20.0	54.0	0.50	0.24	50.0	30.0	–	–	2.0	0.33	0.21	–	–	–	–	–
Wheatgrass, Western	88.0	9.0	80.0	20.0	54.0	0.51	0.25	50.0	30.0	–	–	2.0	0.30	0.20	–	–	–	–	–
Fresh Forages																			
Alfalfa, Fresh	30.7	23.1	92.0	8.0	63.0	0.64	0.37	37.9	31.4	22.5	0.0	1.5	1.77	0.34	0.37	2.92	0.33	0.12	–
Alfalfa Greenchop	40.5	23.1	54.0	46.0	59.0	0.58	0.32	34.4	29.4	2.1	7.1	2.5	1.51	0.29	0.35	2.88	0.21	0.07	0.66
Bermudagrass, Fresh	34.9	15.2	67.6	32.4	57.3	0.55	0.30	66.6	36.1	1.8	0.0	2.8	0.48	0.30	0.22	2.21	0.27	0.03	0.76
Bluestem, Fresh	51.2	6.5	81.0	19.0	53.0	0.49	0.23	75.0	43.5	0.8	0.0	1.0	0.44	0.15	–	1.31	0.10	0.01	–
Cane, Fresh	28.0	11.3	87.0	13.0	63.0	0.64	0.37	60.0	33.3	4.9	0.0	3.9	0.39	0.30	0.24	3.61	0.14	0.05	–
Corn Greenchop	32.1	7.8	78.0	22.0	67.3	0.70	0.43	44.4	24.2	32.3	0.0	2.3	0.34	0.24	0.22	1.58	0.12	0.01	0.18
Forage Sorghum Sudan, Fresh	31.8	12.8	70.7	29.3	57.1	0.55	0.29	59.8	35.8	2.1	0.0	3.0	0.47	0.30	0.30	2.51	0.25	0.03	0.93
Forage Sorghum, Fresh	30.6	8.9	65.6	34.4	60.1	0.60	0.34	56.0	34.9	12.0	0.0	2.2	0.33	0.22	0.22	1.67	0.14	0.02	0.60
Soybean Forage, Fresh	33.4	19.6	67.2	32.8	60.3	0.60	0.34	45.3	33.1	5.9	0.0	3.5	1.27	0.31	0.38	1.79	0.21	0.02	0.29
Millet Forage, Fresh	36.2	12.2	87.0	13.0	52.5	0.48	0.23	65.3	34.5	4.9	0.0	3.9	0.47	0.26	0.39	2.84	0.27	0.16	–
Oat Forage, Fresh	29.6	16.5	73.6	26.4	61.1	0.61	0.35	52.7	34.0	2.7	0.0	3.7	0.48	0.33	0.20	2.77	0.22	0.21	1.02
Peavine Forage, Fresh	18.2	20.1	73.7	26.3	62.1	0.63	0.36	44.3	32.0	3.5	0.0	3.8	1.07	0.35	0.26	2.81	0.21	0.02	0.54
Rye Annual, Fresh	32.0	18.7	74.4	25.6	65.1	0.67	0.40	51.7	32.0	1.9	0.0	4.0	0.52	0.40	0.21	3.03	0.25	0.14	1.02
Sudangrass, Fresh	30.9	12.9	67.2	32.8	54.8	0.51	0.26	61.0	37.3	2.1	0.0	3.0	0.50	0.31	0.32	2.61	0.25	0.04	1.03
Triticale Forage, Fresh	26.0	15.3	77.3	22.7	61.4	0.62	0.35	56.6	34.2	1.7	0.8	2.9	0.34	0.31	0.17	2.58	0.19	0.05	0.75
Wheat Forage, Fresh	34.1	15.3	75.6	24.4	61.7	0.62	0.36	54.2	33.0	4.1	26.3	3.0	0.36	0.31	0.16	2.42	0.19	0.06	0.76
Grains/Oilseeds																			
Barley Grain, Steam Flaked	81.1	12.5	66.9	33.1	84.0	0.94	0.63	26.3	8.4	59.3	0.0	2.0	0.11	0.35	0.15	0.56	0.14	0.03	0.13
Barley Grain, Whole	89.7	12.8	49.2	50.8	84.1	0.94	0.64	18.3	7.1	56.7	10.7	2.2	0.08	0.38	0.13	0.53	0.14	0.02	0.17
Canola Grain, Whole	94.7	23.9	63.0	37.0	109.2	1.26	0.90	28.2	22.0	1.4	0.0	39.8	0.53	0.70	0.35	0.85	0.41	0.02	0.07
Corn Grain, Dry Rolled	85.0	10.0	62.0	38.0	90.0	1.00	0.70	9.0	5.0	–	–	4.3	0.02	0.35	0.10	0.35	0.14	0.06	0.10
Corn Grain, Ear Corn	83.3	8.3	36.4	63.6	84.6	0.94	0.64	19.4	9.0	60.7	0.0	3.6	0.04	0.28	0.12	0.44	0.10	0.01	0.09
Corn Grain, High-Moisture	70.5	8.8	44.7	55.3	90.4	1.02	0.71	9.9	3.7	71.3	2.2	3.9	0.02	0.30	0.12	0.39	0.10	0.02	0.08
Corn Grain, Steam Flaked	80.7	8.5	29.6	70.4	95.0	1.08	0.76	9.0	3.6	76.2	0.0	3.2	0.02	0.25	0.09	0.33	0.10	0.01	0.08
Corn Grain, Whole Popcorn	87.8	11.4	44.7	55.3	72.7	0.78	0.50	10.8	4.5	65.5	0.0	3.5	0.04	0.27	0.13	0.25	0.11	0.01	1.27
Corn Grain, Whole Shelled	87.2	8.8	34.7	65.3	87.6	0.98	0.68	9.7	3.6	72.1	1.8	3.8	0.03	0.29	0.11	0.37	0.11	0.03	0.15

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
Grains/Oilseeds																			
Cottonseed, Whole	92.6	22.9	69.6	30.4	93.0	1.05	0.74	47.8	42.9	2.2	0.0	19.4	0.22	0.53	0.38	1.12	0.39	0.08	–
Field Peas, High Protein	88.2	25.2	57.0	43.0	75.8	0.82	0.54	13.1	7.2	43.9	0.0	1.0	0.14	0.45	0.15	1.04	0.18	0.02	–
Field Peas, Low Protein	89.9	14.7	54.0	46.0	59.0	0.58	0.32	55.4	41.3	46.3	0.0	1.9	0.44	0.26	0.28	0.95	0.21	0.08	–
Flaxseed, Whole	91.6	28.7	65.2	34.8	81.6	0.90	0.61	31.8	18.9	2.0	0.0	27.7	0.31	0.70	0.45	0.94	0.29	0.06	0.09
Grain Sorghum, Dry Rolled	90.0	12.6	43.0	57.0	82.0	0.90	0.61	23.0	10.0	–	–	3.0	0.04	0.34	0.17	0.44	0.14	0.01	0.09
Grain Sorghum, High-Moisture	69.9	10.4	50.8	49.2	86.0	0.96	0.66	9.3	5.5	72.9	0.0	3.5	0.04	0.31	0.14	0.41	0.10	0.06	0.08
Grain Sorghum, Steam Flaked	81.0	10.1	43.0	57.0	93.0	1.05	0.74	9.7	6.3	75.2	0.0	2.6	0.03	0.26	0.12	0.38	0.11	0.01	0.46
Grain Sorghum, Whole	88.7	11.6	28.9	71.1	86.0	0.96	0.66	7.2	4.6	71.2	0.1	3.5	0.06	0.34	0.15	0.39	0.11	0.12	0.32
Millet Grain, Whole	86.7	11.3	28.6	71.4	76.2	0.83	0.54	21.6	13.9	49.2	0.0	3.5	0.68	0.30	0.15	0.38	0.35	0.03	0.09
Oats Grain, Whole	89.9	12.5	43.5	56.5	83.0	0.92	0.62	26.6	13.3	44.1	0.0	6.2	0.10	0.38	0.14	0.50	0.17	0.02	0.14
Peas, Whole	87.3	23.9	84.5	15.5	80.0	0.88	0.59	13.7	9.2	42.7	0.0	1.9	0.13	0.42	0.18	1.07	0.57	0.03	0.13
Rice Grain	88.8	8.4	40.4	59.6	82.7	0.92	0.62	8.2	5.9	77.2	0.0	1.8	0.03	0.25	0.10	0.27	0.10	0.01	0.08
Rye Grain	89.8	11.3	77.5	22.5	80.8	0.89	0.60	15.4	7.5	58.3	0.0	1.4	0.09	0.36	0.14	0.53	0.13	0.03	0.13
Soybeans, Expelled	88.6	46.5	80.0	20.0	77.0	0.84	0.55	12.6	8.8	22.1	0.0	8.2	0.35	0.63	–	1.28	0.33	0.03	–
Soybeans, Extruded	92.5	44.4	57.8	42.2	91.9	1.04	0.72	16.6	10.9	1.3	0.0	13.1	0.29	0.67	0.28	2.05	0.35	0.02	0.08
Soybeans, Roasted	93.3	40.5	56.4	43.6	97.4	1.11	0.78	21.8	11.5	1.3	0.0	21.0	0.25	0.63	0.26	1.83	0.32	0.03	0.08
Soybeans, Whole Raw	92.9	40.0	71.0	29.0	91.0	1.03	0.71	18.0	10.8	1.0	0.0	20.6	0.25	0.62	0.25	1.81	0.31	0.02	0.07
Sunflowers, Whole Raw	94.0	20.1	77.9	22.1	71.7	0.76	0.49	37.4	30.8	0.8	0.0	33.8	0.42	0.59	0.37	1.14	0.23	0.02	0.10
Triticale Grain	88.8	12.1	67.4	32.6	82.7	0.92	0.62	14.1	4.5	61.0	0.0	1.6	0.07	0.36	0.13	0.49	0.15	0.01	0.12
Wheat Grain, Hard Red	88.9	13.8	64.4	35.6	86.8	0.97	0.67	12.4	4.2	62.4	8.6	1.9	0.08	0.36	0.13	0.43	0.15	0.02	0.23
Wheat Grain, Hard Red Steam Flaked	83.0	14.4	74.0	26.0	86.8	0.97	0.67	13.6	5.5	64.9	0.0	1.9	0.04	0.31	0.15	0.42	0.14	0.02	0.09
Wheat Grain, Soft Red	88.0	14.0	–	–	88.0	0.99	0.68	–	–	–	–	–	0.05	0.43	–	–	–	–	–
Wheat Grain, Soft White	89.0	11.3	74.0	26.0	85.0	0.95	0.64	9.7	–	–	–	1.9	0.07	0.33	0.11	0.43	0.13	0.02	–
Minerals																			
Ammonium Chloride	100.0	163.6	100.0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	–	–	66.28
Ammonium Phosphate (Dibasic)	100.0	115.9	100.0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	20.60	–	–	–	–	–
Ammonium Phosphate (Monobasic)	100.0	70.9	100.0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	24.74	–	–	–	–	–
Ammonium Sulfate	100.0	134.1	100.0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	24.10	–	–
Bone Meal	97.0	13.2	40.0	60.0	0	–	–	0.0	0.0	0.0	0.0	0.0	30.71	12.86	–	–	–	–	–
Calcium Carbonate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	39.39	–	–	–	–	–	–
Calcium Chloride	95.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	30.00	–	–	–	–	–	60.00
Calcium Chloride Anhydrous	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	36.11	–	–	–	–	–	63.89
Calcium Chloride Dihydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	27.26	–	–	–	–	–	54.96
Calcium Hydroxide	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	54.09	–	–	–	–	–	–
Calcium Oxide	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	71.47	–	–	–	–	–	–

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
Minerals																			
Calcium Phosphate (Monobasic)	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	17.12	26.47	–	–	–	–	–
Calcium Sulfate	95.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	30.00	–	–	–	2.50	–	–
Calcium Sulfate Dihydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	23.28	–	–	–	18.62	–	–
Copper Sulfate Pentahydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	12.84	–	–
Dicalcium Phosphate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	22.00	19.30	–	–	1.14	–	–
Iron Sulfate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	12.35	–	–
Limestone	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	34.00	–	2.06	–	–	–	–
Limestone Dolomitic, Magnesium	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	22.30	–	9.99	–	–	–	–
Magnesium Carbonate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	0.02	–	30.81	–	–	–	–
Magnesium Chloride Hexadydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	11.96	–	–	–	34.88
Magnesium Hydroxide	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	41.69	–	–	–	–
Magnesium Oxide	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	3.07	–	56.20	–	–	–	–
Magnesium Sulfate Heptahydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	9.86	–	13.00	–	–
Manganese Sulfate Monohydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	18.97	–	–
Manganese Sulfate Pentahydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	13.30	–	–
Monocalcium Phosphate	95.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	18.00	21.00	0.30	0.10	0.04	–	–
Monosodium Phosphate	97.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	22.50	–	–	–	–	–
Oyster Shell, Ground	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	38.00	–	–	–	–	–	–
Phosphate, Deflourinated	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	32.00	18.00	–	–	–	–	–
Phosphate, Mono-mono	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	22.50	–	–	–	16.68	–
Phosphate, Rock	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	35.00	13.00	–	–	–	–	–
Phosphate Rock, Low Fluor	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	36.00	14.00	–	–	–	–	–
Phosphate Rock, Soft	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	17.00	9.00	–	–	–	–	–
Phosphoric Acid	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	31.60	–	–	1.55	–	–
Potassium Bicarbonate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	39.05	–	–	–
Potassium Carbonate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	56.58	–	–	–
Potassium Chloride	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	50.00	–	–	47.30
Potassium Iodide	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	21.00	–	–	–
Potassium Sulfate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	41.84	17.35	–	–
Rock Phosphate, Defluorinated	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	32.00	18.00	–	–	–	–	–
Salt (Sodium Chloride)	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	–	39.34	60.66
Sodium Bicarbonate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	–	27.00	–
Sodium Phosphate (Monobasic, Monohydrate)	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	22.50	–	–	–	16.68	–
Sodium Selenite	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	–	26.60	–
Sodium Sulfate Decahydrate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	9.95	14.27	–
Sodium Tripolyphosphate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	25.00	–	–	–	31.00	–

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
Minerals																			
Zinc Sulfate	100.0	0	0	0	0	–	–	0.0	0.0	0.0	0.0	0.0	–	–	–	–	17.68	–	–
Pastures																			
Alfalfa/Grass Pasture, Vegetative	25.0	18.5	–	–	67.0	0.69	0.43	–	–	–	–	–	1.52	0.36	–	–	–	–	–
Bluestem Pasture, Vegetative	28.0	11.0	80.0	20.0	65.0	0.67	0.41	68.0	52.0	–	–	2.0	0.55	0.20	0.0	0.0	0.0	0.0	0.0
Bluestem Pasture, Dormant	80.0	4.0	80.0	20.0	43.0	0.32	0.08	68.0	52.0	–	–	2.0	0.35	0.10	0.0	0.0	0.0	0.0	0.0
Buffalograss Pasture, Dormant	80.0	5.5	80.0	20.0	46.0	0.37	0.12	68.0	40.0	–	–	2.0	0.34	0.12	0.0	0.0	0.0	0.0	0.0
Buffalograss Pasture, Vegetative	26.0	13.0	80.0	20.0	66.0	0.68	0.42	40.0	30.0	–	–	2.0	0.57	0.21	0.0	0.0	0.0	0.0	0.0
Cornstalks Pasture, Early	65.0	6.5	75.0	25.0	52.0	0.47	0.22	60.0	30.0	–	–	0.0	0.47	0.22	0.0	0.0	0.0	0.0	0.0
Cornstalks Pasture, Late	85.0	3.5	75.0	25.0	44.0	0.34	0.10	70.0	40.0	–	–	0.0	0.34	0.10	0.0	0.0	0.0	0.0	0.0
Fescue, Winter	35.0	11.0	80.0	20.0	54.0	0.51	0.25	50.0	35.0	–	–	2.0	0.35	0.30	0.0	0.0	0.0	0.0	0.0
Native, June	20.0	11.0	72.0	28.0	64.9	0.70	0.40	65.6	40.0	–	–	3.0	0.26	0.15	0.0	0.0	0.0	0.0	0.0
Native, Winter	80.0	4.7	63.0	37.0	50.5	0.99	0.44	66.1	40.0	–	–	3.0	0.26	0.15	0.0	0.0	0.0	0.0	0.0
Peavine Forage Pasture	18.2	20.1	73.7	26.3	62.1	0.63	0.36	44.3	32.0	3.5	0.0	3.8	1.07	0.35	0.26	2.81	0.21	0.02	0.54
Grain Sorghum Stalks Pasture, Early	55.0	7.5	75.0	25.0	52.0	0.47	0.22	50.0	40.0	–	–	0.0	0.55	0.18	0.0	0.0	0.0	0.0	0.0
Grain Sorghum Stalks Pasture, Late	75.0	4.0	75.0	25.0	46.0	0.37	0.12	55.0	40.0	–	–	0.0	0.40	0.12	0.0	0.0	0.0	0.0	0.0
Shortgrass Pasture, Western Kansas Native February	–	4.6	–	–	–	–	–	–	51.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native March	–	4.8	–	–	–	–	–	–	48.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native April	–	5.7	–	–	–	–	–	–	47.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native May	–	7.0	–	–	–	–	–	–	45.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native June	–	6.7	–	–	–	–	–	–	44.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native July	–	6.4	–	–	–	–	–	–	45.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native August	–	6.0	–	–	–	–	–	–	44.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native September	–	5.5	–	–	–	–	–	–	46.0	–	–	–	–	–	–	–	–	–	–
Shortgrass Pasture, Western Kansas Native October	–	5.0	–	–	–	–	–	–	48.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native February	–	3.8	–	–	–	–	–	–	51.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native March	–	4.2	–	–	–	–	–	–	47.0	–	–	–	–	–	–	–	–	–	–

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
Pastures																			
Tallgrass Pasture, Eastern Kansas Native April	–	5.7	–	–	–	–	–	–	47.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native May	–	11.7	–	–	–	–	–	–	37.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native June	–	8.0	–	–	–	–	–	–	39.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native July	–	6.4	–	–	–	–	–	–	41.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native August	–	5.5	–	–	–	–	–	–	43.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native September	–	5.0	–	–	–	–	–	–	44.0	–	–	–	–	–	–	–	–	–	–
Tallgrass Pasture, Eastern Kansas Native October	–	4.3	–	–	–	–	–	–	46.0	–	–	–	–	–	–	–	–	–	–
Sorghum Sudan Pasture	22.0	14.0	75.0	25.0	61.0	0.61	0.35	39.0	40.0	–	–	0.0	0.43	0.28	0.0	0.0	0.0	0.0	0.0
Warm Season, Vegetative	25.0	9.0	65.0	35.0	50.0	0.50	0.30	80.0	45.0	–	–	3.0	0.35	0.35	0.19	2.00	0.12	0.0	0.0
Wheat Pasture	20.0	20.0	76.0	24.0	57.0	0.80	0.58	50.0	30.0	–	–	3.0	0.40	0.30	0.15	4.00	0.22	0.0	0.0
Proteins																			
Alfalfa Meal	88.0	18.0	80.0	20.0	61.0	0.61	0.35	45.0	35.0	–	–	2.8	1.52	0.25	0.20	1.78	0.29	0.0	0.0
Biuret	99.0	253.0	100.0	0.0	0.0	–	–	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blood Meal	89.6	95.1	25.4	74.6	74.6	0.81	0.52	4.5	0.7	0.6	0.0	1.2	0.14	0.23	0.04	0.41	0.65	0.26	0.32
Canola Meal	90.4	40.9	57.7	42.3	71.1	0.76	0.48	30.2	21.4	1.3	8.8	7.3	0.69	1.10	0.56	1.26	0.71	0.06	0.12
Corn Germ Meal	90.6	22.1	52.2	47.8	78.6	0.86	0.57	39.4	12.3	19.7	0.0	11.5	0.04	1.07	0.30	0.69	0.24	0.04	0.10
Corn Gluten Meal	90.4	68.2	30.3	69.7	87.8	0.99	0.68	8.1	4.8	15.4	0.2	2.4	0.04	0.55	0.09	0.26	0.82	0.05	0.11
Cottonseed Meal	88.6	45.0	57.3	42.7	69.6	0.74	0.46	33.6	23.7	1.7	0.0	3.9	0.28	1.13	0.63	1.56	0.43	0.14	0.08
Feather Meal	92.0	91.1	29.2	70.8	79.1	0.87	0.58	25.8	14.3	0.7	17.7	9.7	0.76	0.44	0.08	0.24	1.69	0.21	0.27
Fishmeal	92.3	66.2	55.0	45.0	81.9	0.91	0.61	13.6	3.1	5.8	–	11.9	5.20	2.90	0.20	0.92	0.82	0.65	1.15
Linseed Meal	90.5	36.9	68.1	31.9	73.6	0.79	0.51	32.1	17.3	2.5	0.0	12.0	0.39	0.88	0.58	1.18	0.38	0.09	0.08
Peanut Meal	94.1	45.0	71.8	28.2	80.8	0.89	0.60	19.9	13.2	6.9	0.0	7.7	0.21	0.59	0.32	1.11	0.27	0.03	0.21
Safflower Meal	93.5	23.1	76.3	23.7	55.8	0.53	0.28	51.5	37.6	1.2	0.0	12.3	0.34	0.63	0.34	0.96	0.24	0.07	0.27
Soybean Meal High CP	89.2	52.9	70.5	29.5	79.5	0.87	0.58	11.3	7.5	2.0	13.3	1.9	0.42	0.75	0.32	2.36	0.41	0.02	0.06
Soybean Meal Low CP	91.7	46.5	55.9	44.1	81.1	0.90	0.60	18.8	10.9	5.1	11.6	8.3	0.37	0.66	0.29	2.02	1.05	0.07	1.09
Soybean Meal, Heated	89.8	48.9	50.6	49.4	79.3	0.86	0.59	22.7	10.9	1.3	0.0	8.3	0.35	0.69	0.29	2.13	0.37	0.04	0.07
Sunflower Meal	90.4	35.0	72.1	27.9	66.4	0.69	0.42	41.7	30.3	1.1	0.0	10.8	0.44	1.04	0.57	1.56	0.40	0.04	0.15
Urea	99.0	281.0	100.0	0.0	0.0	–	–	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Feedstuff	% DM	% CP	RDP, % of CP	RUP, % of CP	% TDN	NEm Mcal/lb	NEg Mcal/lb	% NDF	% ADF	% Starch	% Sugar	% Fat	% Calcium	% Phos	% Mag	% K	% S	% Na	% Cl
Silages																			
Alfalfa Haylage	41.0	20.1	54.0	46.0	63.0	0.64	0.37	42.5	36.1	1.9	1.9	2.0	1.56	0.30	0.33	2.75	0.31	0.13	0.63
Alfalfa Haylage, Early Bloom	40.0	18.0	85.0	15.0	66.0	0.68	0.42	40.0	30.0	–	–	3.3	2.33	0.31	0.25	2.52	0.29	0.0	0.0
Alfalfa Haylage, Late Bloom	40.0	15.0	85.0	15.0	60.0	0.59	0.34	46.0	38.0	–	–	2.8	1.41	0.25	0.32	1.71	0.28	0.0	0.0
Alfalfa Haylage, Mid Bloom	40.0	17.0	85.0	15.0	63.0	0.64	0.38	42.0	33.0	–	–	3.0	1.41	0.24	0.30	2.45	0.30	0.0	0.0
Alfalfa/Brome Haylage Mix	40.0	16.0	85.0	15.0	62.0	0.62	0.36	50.0	35.0	–	–	3.0	1.52	0.37	0.32	2.30	0.25	0.0	0.0
Barley Silage	33.6	12.0	79.2	20.8	60.6	0.60	0.34	54.8	34.7	9.2	0.0	3.5	0.41	0.30	0.18	2.06	0.19	0.19	0.86
Bermudagrass Silage	39.0	13.5	70.3	29.7	55.4	0.52	0.27	66.6	40.3	2.6	0.0	3.2	0.51	0.29	0.23	2.16	0.24	0.05	0.71
Bromegrass Silage	42.1	9.0	72.0	28.0	55.0	0.52	0.26	71.1	43.1	4.8	0.0	2.8	0.47	0.22	0.17	1.67	0.13	0.04	0.0
Cane Silage	29.3	7.7	73.0	27.0	65.0	0.67	0.40	53.0	35.3	11.4	0.0	2.4	0.35	0.19	0.29	1.91	0.35	0.10	0.13
Corn Earlage	62.5	8.1	51.4	48.6	84.3	0.94	0.64	21.0	9.9	60.2	1.3	3.5	0.05	0.27	0.12	0.47	0.10	0.02	0.11
Corn Silage	33.1	8.2	74.6	25.4	67.7	0.71	0.44	43.0	25.5	32.6	4.3	3.3	0.24	0.23	0.17	1.07	0.10	0.02	0.25
Corn Silage, Droughted	30.0	9.3	68.0	32.0	64.0	0.66	0.40	59.0	38.0	–	–	3.0	0.34	0.19	0.0	0.0	0.0	0.0	0.0
Corn Silage, Mature	40.0	8.4	68.0	32.0	70.0	0.74	0.47	51.0	38.0	–	–	3.0	0.23	0.22	0.20	1.41	0.15	0.0	0.0
Corn Silage, Well Eared	33.0	8.1	68.0	32.0	70.0	0.74	0.47	49.0	32.0	–	–	3.0	0.23	0.22	0.0	0.0	0.0	0.0	0.0
Corn Snaplage	58.9	8.1	55.3	44.7	82.0	0.91	0.61	23.3	11.2	57.0	0.0	3.5	0.05	0.27	0.11	0.51	0.10	0.01	0.13
Corn Stalklage	40.7	6.8	71.0	29.0	53.6	0.50	0.24	63.8	45.6	6.0	0.0	2.0	1.76	0.16	0.22	1.62	0.10	0.24	0.53
Forage Sorghum Silage	28.9	9.0	69.8	30.2	57.4	0.56	0.30	57.7	37.0	9.8	1.4	2.9	0.44	0.24	0.26	1.89	0.15	0.02	0.70
Forage Sorghum Sudan Silage	31.3	12.3	69.6	30.4	56.1	0.53	0.28	61.1	35.8	2.9	5.8	3.3	0.55	0.29	0.27	2.48	0.18	0.03	0.76
Forage Sorghum Silage, High Grain	32.0	7.8	68.0	32.0	63.0	0.64	0.38	51.0	38.0	–	–	3.0	0.40	0.23	0.0	0.0	0.0	0.0	0.0
Grain Sorghum Silage	36.5	9.2	72.0	28.0	59.0	0.58	0.32	49.2	31.1	4.6	0.2	2.4	0.36	0.23	0.19	1.66	0.10	0.02	0.0
Grain Sorghum Silage, Head Chop	67.0	11.1	75.0	25.0	76.0	0.83	0.54	50.0	40.0	–	–	2.0	0.13	0.27	0.0	0.0	0.0	0.0	0.0
Johnson Grass Haylage	50.1	7.8	83.0	17.0	54.0	0.50	0.25	62.3	41.2	0.6	0.0	2.1	0.59	0.18	0.15	1.30	0.09	0.0	0.0
Kochia Silage	37.1	15.4	76.0	24.0	58.0	0.56	0.31	45.7	31.7	23.7	0.0	1.2	1.10	0.25	0.59	3.08	0.37	0.16	0.18
Millet Silage	34.9	12.3	68.1	31.9	53.0	0.49	0.23	61.9	40.3	3.6	0.0	2.3	0.51	0.32	0.37	2.84	0.20	0.03	1.21
Oat Silage	33.8	12.7	77.6	22.4	58.0	0.56	0.31	58.9	38.5	3.1	0.0	3.7	0.46	0.32	0.18	2.53	0.19	0.23	0.91
Peanut Silage	38.0	13.7	65.6	34.4	56.3	0.54	0.28	53.6	40.3	2.3	0.0	3.7	1.33	0.27	0.39	1.84	0.17	0.03	0.74
Rice Silage	39.7	7.3	62.9	37.1	56.0	0.53	0.28	55.1	40.3	18.6	0.0	2.4	0.24	0.23	0.16	1.48	0.13	0.02	0.45
Ryegrass Silage	36.8	14.6	76.2	23.8	59.6	0.59	0.33	57.7	37.5	1.6	1.5	3.9	0.50	0.34	0.19	2.78	0.21	0.14	0.99
Sorghum Stover Silage	40.0	5.2	75.0	25.0	54.0	0.50	0.25	68.0	56.0	–	–	2.0	0.52	0.13	0.17	1.20	0.26	0.0	0.0
Soybean Silage	37.4	17.1	68.5	31.5	57.8	0.56	0.30	47.5	36.9	4.2	0.0	4.3	1.31	0.30	0.38	1.81	0.20	0.02	0.47
Sudangrass, Silage	31.3	12.1	70.3	29.7	53.5	0.49	0.24	62.3	40.8	1.8	0.8	3.1	0.52	0.30	0.27	2.67	0.18	0.03	0.92
Sugarcane Bagasse, Silage	39.8	3.9	53.7	46.3	45.0	0.36	0.11	75.6	62.1	0.9	0.0	1.1	0.29	0.05	0.09	0.41	0.09	0.03	0.15
Sugarcane Silage	34.2	5.4	52.3	47.7	52.0	0.47	0.22	68.8	47.9	3.0	0.0	1.9	0.29	0.12	0.16	1.32	0.18	0.04	0.81
Sunflower Silage	50.4	11.3	72.0	28.0	63.3	0.64	0.38	47.2	38.7	2.8	0.0	8.7	1.26	0.36	0.57	3.27	0.24	0.03	1.18
Triticale Silage	33.0	13.9	81.9	18.1	57.8	0.56	0.30	58.6	38.2	1.9	1.7	3.7	0.43	0.34	0.17	2.92	0.20	0.05	1.02
Wheat Silage	34.1	12.7	82.2	17.8	59.1	0.58	0.32	56.5	36.6	6.6	1.8	3.4	0.38	0.30	0.16	2.38	0.18	0.05	0.82

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Information adapted from Gerry Kuhl et al., *Nutritional Composition of Feedstuffs for Beef Cattle***,** L884, Kansas State University, April 1993.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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